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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.         | CONFIRMATION NO. |
|---|-------------|----------------------|-----------------------------|------------------|
| 10/791,889  | 03/04/2004  | Hiromasu Matsuoka    | 402990                      | 5188             |
| 23548   | 7590        | 01/26/2006           |                             |                  |
| LEYDIG VOIT & MAYER, LTD<br>700 THIRTEENTH ST. NW<br>SUITE 300<br>WASHINGTON, DC 20005-3960 |             |                      | EXAMINER<br>GOLUB, MARCIA A |                  |
|   |             |                      | ART UNIT<br>2828            | PAPER NUMBER     |

DATE MAILED: 01/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/791,889

Applicant(s)

MATSUOKA ET AL.

Examiner

Marcia A. Golub

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 5, 6, 8 and 10 is/are allowed.
- 6) ☒ Claim(s) 1-4, 7, 9 and 17-20 is/are rejected.
- 7) ☐ Claim(s) 11-16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/4/2004, 9/15/2005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

The subject matter of this application admits of illustration by a drawing to facilitate understanding of the invention. Applicant is required to furnish a drawing under 37 CFR 1.81(c). No new matter may be introduced in the required drawing. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d).

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the subject matter disclosed in claims 11, 12, 17-20 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an

application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1, 3, 17, 19** are rejected under 35 U.S.C. 102(b) as being anticipated by Okada et al. (6,628,689).

Regarding **claim 1**, Figs 1 and 6 of Okada disclose "a semiconductor laser device which emits light at an oscillation wavelength, the laser device comprising a reflective film [22] including a multilayer dielectric film [23-27], on at least one side of optical exit face [21] of a laser chip [20], wherein the reflective film [22] includes, in sequence from a side in contact with the laser chip [23 is in contact with 20], a first dielectric film [23] of a refractive index  $n_1$  [ $n_1$ ], a second dielectric film [25] of a refractive index  $n_2$  [ $n_3$ ], a third dielectric film [26] of a refractive index  $n_3$  [ $n_4$ ], and a fourth dielectric film [27] of a refractive index  $n_4$  [ $n_3$ ], and  $n_2=n_4 < n_1 < n_3$  [ $n_3 < n_1 < n_4$ ].

Regarding **claims 3, 17, 19** Okada discloses a semiconductor laser device as described above,

"wherein each of the first, second, third, and fourth dielectric films has a thickness, in terms of optical length, within  $\pm 30\%$  of a thickness that is an integer multiple of  $1/4$  of the oscillation wavelength of the semiconductor laser device;(7/4-6)

wherein the laser chip has a plurality of light emitting points [1,2] which emit at least two different oscillation wavelengths [650 nm, 780 nm].

including at least two of the semiconductor laser devices [devices containing 1 and 2] in a single package [integrated on the same substrate], wherein the laser chips emit different oscillation wavelengths [650 nm, 780 nm], and each multilayer dielectric film on the optical exit face of each laser chip is the same material with the same thickness [thicknesses are calculated based on the mean wavelength and therefore are the same for both lasers]."

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 2, 4, 7, 9, 18, 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada as applied to claim 1 above.

Regarding **claim 2**, Okada discloses a semiconductor laser device as described above, except the order of dielectric layers  $n_1$  and  $n_3$  is interchanged.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to interchange the order of dielectric layers in the reflective film since the effective reflectivity of the reflective film does not depend on the order in which the layers are arranged. The ordinary artisan would have been motivated to modify the device of Okada in the manner set forth above for at least the purpose of manufacturing convenience.

Regarding **claim 7**, Okada discloses a semiconductor laser device as described above, "wherein the first dielectric film is selected from the group consisting of  $\text{Al}_2\text{O}_3$ ,  $\text{CeF}_3$ ,  $\text{NdF}_3$ ,  $\text{MgO}$  and  $\text{Y}_2\text{O}_3$  [ $\text{Al}_2\text{O}_3$ ], the second and fourth dielectric films are selected from the group consisting: of  $\text{SiO}_2$ ,  $\text{MgF}_2$ ,  $\text{BaF}_2$  and  $\text{CaF}_2$  [ $\text{SiO}_2$ ]".

Okada discloses the third film is made of Si, he does not disclose that "the third dielectric film is selected from the group consisting of  $\text{Ta}_2\text{O}_5$ ,  $\text{SiO}$ ,  $\text{ZrO}_2$ ,  $\text{ZnO}$ ,  $\text{TiO}$ ,  $\text{TiO}_2$ ,  $\text{ZnS}$ ,  $\text{Nb}_2\text{O}_5$ ,  $\text{HfO}_2$  and  $\text{AlN}$ ." However, Okada discloses that other materials can be used (16/16-19) and that Al and Si targets are used in a sputtering system with  $\text{O}_2$  and  $\text{N}_2$  gases (7/66-67, 8/1-5). Therefore a material from the disclosed group, namely  $\text{SiO}$  could be easily produced using the sputtering system described by Okada.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the third dielectric layer out of  $\text{SiO}$ . The ordinary artisan would have been motivated to modify the device of Okada in the manner set forth above for at least the purpose of achieving a different reflectivity of the reflective film.

Regarding **claims 4, 9, 18 and 20**, the apparatus set-forth above with regards to claims 3, 7, 17 and 19 discloses the same limitations as the claims in question.

***Allowable Subject Matter***

**Claims 5, 6, 8, 10** are allowed.

The following is an examiner's statement of reasons for allowance: the prior art of record does not disclose a semiconductor laser device containing a reflective layer on the light emitting face with the following parameters: the reflective film has a reflectance of 3% to 15%, multiple dielectric layer  $n_1$ ,  $n_2$ ,  $n_3$ ,  $n_4$ , and the refractive index  $n_3$  satisfies  $1.9 < n_3 < 2.3$ , and the thickness  $d_1$  is substantially equal to  $(2 \cdot h + 1)\lambda / (4 \cdot n_1)$ , the thickness  $d_2$  is substantially equal to  $(2 \cdot i + 1)\lambda / (4 \cdot n_2)$ , the thickness  $d_3$  is substantially equal to  $(2 \cdot j + 1)\lambda / (4 \cdot n_3)$ , and the thickness  $d_4$  is substantially equal to  $(2 \cdot k + 1)\lambda / (4 \cdot n_4)$ , and each of  $h$ ,  $i$ ,  $j$  and  $k$  is zero or a positive integer.

**Claim 11-16** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record does not disclose depositing additional dielectric layers in a region other than a light emitting point on the optical exit faces of the laser chip, such that reflectance of the region other than the light emitting point is smaller than reflectance of the region of the light emitting point.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

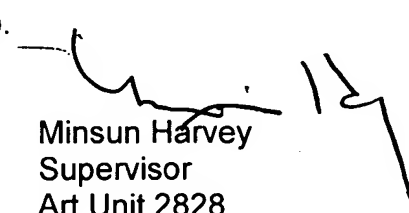
**Contact Info**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marcia A. Golub whose telephone number is 571-272-8602. The examiner can normally be reached on M-F 9-6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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